

# Weekly Report

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## 1 Work scheduled in last week

The work scheduled in last week are listed as below:

1. reconstruct an OOP version LBG-VQ project.
2. read papers and course materials(must be done).
3. vis topic group meeting.
4. ask Jiangang to implment the HVQ method(take into action).

## 2 Introduction

The proposed plan has been done. Firstly, we updated the original version LBG-VQ project to an OOP version, while some details still need to be modified. Secondly, Most of the paper reading job is already done in last week and I made a PPT about volume compression in group meeting. Besides, I scheduled a short meeting with Prof. Lu Zheming to talk about the VQ compression. Finally, HVQ implementation begins.

## 3 Details

This week, most of my time is put into paper reading and coding. Nine papers have been reread in detail and the most important ones among them are ¡Compression Domain Volume Rendering¿ and ¡Adaptive Textures Maps¿. Because we want to implement HVQ, so many resources about the prior have been found to study. Jiangang has some problems in developing the project, mainly focused on PCA topic. Hence, we are getting ready to start it. An OOP version of old project is a basic work for the developing and we should do more test to ensure the correctness after it has been updated.

After the group meeting and talk with Prof.Lu, in our method, the main shortcoming is data dependent nature of VQ itself, if we want to achieve some valuable target, to combine VQ method with other compression methods, such as transform methods, will be a good and inevitable choice. Furthermore, hierarchical structure and approach is also the basic concept in this project. As Prof.Lu said, the order of the pixels, or voxels in block must be a key aspect which affect the compression quality, we will try to study the role of this feature in VQ based volume compression. At last, something like global codebook and local codebook, codebook generalize are also the potential research directions.

## 4 Conclusion and Future Work

As a conclusion, here I just give a plan about compression project in the future:

1. the OOP version LBG-VQ project should be test to ensure its correctness, if possible, to update it further for the convenient of HVQ development.
2. implement HVQ.

3. after the first phases, as we imaged before, to combine it with PSH.
4. a complete compression volume rendering software with all these features embedded in.

## References